

# PCMCIA "Pager Card" Prototype

## (Continued)

### Power Source

Battery:

- 700 hours out of portable (350 hours lower limit)
- Internal see PCMCIA STD release 1.0 paragraph 3.1.6 battery location
- Consider re-chargeable options when card is inserted in platform
- Use portable power source when card is inserted in PCMCIA slot
- Insert and remove with portable power active

### Product Features

Data Rate:

2,400 BPS; product evolution should anticipate upgrade to 4,800 or 9,600 BPS as 2nd generation product

Format:

POCSAG (2400 BPS)

Address:

Minimum of 4 POCSAG addresses. Minimum of 16 addresses including the 2 POCSAG function bits.

Memory:

32K bytes minimum

Internal Clock:

Time and date stamp of all received messages or last packet received.

Electrical Requirements/  
RF Requirements

Commensurate with Motorola Bravo pager  
Commensurate with Motorola Bravo pager

### Portable Unit

(PCMCIA Card Driver Software)

Display Features:

PCMCIA pager card should rely on software in the portable unit to manage the information in RAM

- Message waiting indicator
- Number of messages, type of message, time and date stamp of message arrival
- Low battery indicator for PCMCIA card when voltage not within operational limit
- Battery charging indicator (min./max.)
- PCMCIA card in-range indicator

# PCMCIA Transceiver Card

**Receiver:** See PCMCIA receiver card

**Transmitter:**

**Power Out:** 100 mw to 500 mw

**Frequency:** 930 MHz

**Modulation:** Constant Amplitude

**Bandwidth:** FCC masking specification  
for 25 kHz bandwidth

## U. S. Portable Computer Installed Base

	1985	1990	1995
Laptop	396 K	3859K	12,072K
Notebook		169K	6122K
Pen-based		9K	6110K
Handheld	—	<u>94K</u>	<u>11,462K</u>
Total	396 K	5537K	37,229K
% Growth		1300%	570%

Source: DATAQUEST, 1991

## Summary Biographical Information -- Roger D. Linquist

### PageMart, Inc.

**CEO, PageMart, Inc. 1989-Present**

- *Paging Business*
  - Founder of PageMart
  - Direct Broadcast Satellite (DBS) Control of paging transmitters (pioneering DBS system in Dallas/Ft. Worth, February 1990)

### PacTel Personal Communications

**CEO, PacTel Personal Communications, 1986-1989**

- *Cellular Business (largest U.S. subscriber base)*
  - 100% or controlling interest: Los Angeles, San Diego, Sacramento, Atlanta, Detroit
  - Active minority interest (system management): San Francisco/San Jose
  - Passive minority interest: Dallas/Ft. Worth
- *Paging Business (Third largest)*
- *Automatic Vehicle Location*

### Communications Industries

**CEO (V. P., COO), Communications Industries, 1982-86**

- *Paging Business (Third largest)*
- *Cellular Business*
  - Founding Director of Cellular Telecommunications Industry Association (CTIA)
  - 100% interest: Atlanta and San Diego
  - Minority interest: San Francisco/San Jose and Dallas/Ft. Worth
- *Manufacturing Business*
  - Paging switch manufacturer (BBL)
  - Mobile Communications Components Manufacturer (Decibel Products)

### McKinsey & Co., Inc. (Management Consultants)

**Management Consultant, McKinsey & Co, Inc., 1976-82**

- *Telecommunications Business Practice*
- *Computer and Computer Peripheral Business Practice*
- *Space Systems Technology Businesses*

### Texas Instruments

**Department Manager, Video Systems and Calculator Products, 1974-1976**

- *Consumer Products Division*
  - Video Systems Program (all electronic CCD camera)
  - Business calculator products

**Branch Manager, Systems & Information Sciences, 1971-74**

- *Central Research Laboratory*
  - Interactive Cable TV System Program (hardware and software development)
  - Advanced RF Receiver Technology (all solid state VHF/UHF TV Turner)

### EDUCATION

Northwestern University	-- MBA
Purdue University	-- MSME
Purdue University	-- BSME

## Summary Biographical Information -- Malcolm Lorang

### PageMart, Inc.

#### **V. P. Engineering, PageMart, 1989-Present**

- Advanced wireless system and equipment design

### International Teletrac Systems

#### **Corporate Scientist, International Teletrac Systems, 1988-89**

- Corporate Systems/Architect Engineer
- Liaison to AVM manufacturers and AVM Product/Architect Engineer

### Texas Instruments

#### **Member of Technical Staff, Texas Instruments, 1972-1988**

- **Government Products Group:** Member of Technical Staff - Systems Engineer
- **Semiconductor Group:** System design for next generation Telco product IC's
- **Corporate Lab/Corporate Engineering Center:** Architect/Systems and Circuit Engineer of Bernoulli disk product, facilities computer communications network product, video coding products and rf systems design.

### Magnavox Research Labs

#### **Senior Engineer, Magnavox Research Labs, 1957-1972**

- System Architect and Engineer on Specialized communications systems, primarily on Spread Spectrum Communications Systems.

### FORMAL EDUCATION

West Coast University -- MS, Operation Research  
-- MS, System Engineering  
-- MS, Management Science  
Pacific State University -- BSEE

## **References**

### **References from M-Tel Comments**

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        Mobile Communications Engineering  
        McGraw-Hill Book Company  
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- MT5    W.C.Y. Lee  
        Mobile Communications Design Fundamentals  
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        1986
- MT7    W. C. Y. Lee  
        Mobile Cellular Telecommunications Systems,  
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        1989 (see page 27 or attached figure)

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        Cellular Telephone System
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        Microcell System For Cellular Telephone System
- 3)    W.C.Y. Lee, Patent Number 4,249,181; Feb. 3, 1981  
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